

## **BANKING CRISES IN EMERGING ECONOMIES AND TRANSITION**

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### **Abstract**

*Financial crises have had a significant impact on the historical development of financial systems. Stable banking system are an important component of well-functioning financial system. During the last 25 years a number of developed economies, developing countries, and economies in transition experienced severe banking crises. Banks can fail because of their insolvency, or aggregate shortage of liquidity can make them insolvent. Emerging market financial systems have proved to be less resilient than the banking systems of developed countries. Policymakers have responded to banking crises with various interventions. One of the most important consequences of the banking crises in the emerging economies has been changes in the structure of bank ownership.*

**Key words:** bank failures, banking panics and crises, asymmetric information, leading indicators, twin crises, resolutions.

### **I. Introduction**

Banking crises have proliferated throughout the world in recent decades as documented by the comprehensive studies of Caprio and Klingebiel (1996 and 2002), Linderger, Garcia and Saal (1996), Dizoe-bek and Pazarbasioğlu (1997), Demircuc and Detragiache (1998), Kaminsky and Reinhart (1999), Demircuc-Kunt and Kane (2002), and Laeven and Fabian (2008). Linderger, Garcia and Saal (1996) report that 133 of 181 IMF members had experienced noteworthy banking distress over the period of 1980-1996. Demircuc-Kunt and Kane (2002) document 112 incidences of systemic crises in 93 countries and 51 incidences of borderline crisis in 46 countries

Not only developing countries but also industrial countries such as the United States, Japan, the Nordic countries, France and Spain have experienced banking crises of various degrees of severity. Although banking crises occurred all over the world, the nature, cost, origins and consequences of the crises very differ between emerging-market countries and developed countries. In emerging-market countries, banking crises occur more frequently, crisis management is harder for regulators and supervisors, banks and domestic economies are impaired more severely during banking crises, and the cost of resolving banking crises are significantly higher (Rojas-Suarez and Weisbrod, 1996). To avoid adverse effects of bank runs and a systemic crisis, many governments provide a safety net for banks. Thus over time, institutions of a financial safety net, including central banks' lender of last resort facilities and deposit insurance accompanied by bank regulation and supervision and resolution schemes, have been established to prevent large disturbances at one or more banks from spilling over to the whole financial system.

### **II. Foreign Bank Participation and Banking Crisis**

The presence of foreign banks, which base in a home country with strong economy and banking regulation and supervision, in domestic financial markets of transition economies can promote the stability of the domestic deposit base and the stability of domestic banking and financial system, make banking systems more robust to adverse domestic or external shocks, improve prudential supervision and regulation of the domestic financial system, and enhance the transparency in the banking sector and efficiency of the macroeconomic policies. During banking crises, the presence of well-capitalized foreign banks can promote the stability of the domestic deposit base, and thus the stability of domestic banking and financial system, because they are less susceptible to domestic economic shocks, and they are generally perceived to be safer than domestic banks.

Since international foreign banks have internationally diversified portfolios and only some part of their asset portfolio includes the local market exposure, they will be less affected by the host country-specific adverse shocks. By knowing this fact, depositors would have less concern that a macroeconomic shock would produce crisis in the domestic banking system, and thus their confidence in the domestic system would increase. Similarly, joint venture subsidiaries with foreign banks will provide internationalization of domestic banking system, increasing the resistance of domestic banking system against adverse country specific shocks (Gavin and Hausmann, 1997).

A bank run is most disruptive if it takes the form of flight to currency, i.e. people hold their money in cash outside the banking system or they remove their foreign exchange funds from the country. In the case of anticipated trouble in the financial system, depositors in emerging markets often engage in capital flight. They not only try to buy foreign exchange with their domestic currency funds but also keep their funds out of the banking system, causing stress on foreign exchange rates and the liquidity of domestic banks. However, as long as the foreign bank branches and subsidiaries do not have different reserve ratios than domestic banks, reshuffling deposits from domestic banks to subsidiaries and branches of foreign banks, which are located in the country, will not change aggregate bank deposits, reserves or the money supply. Thus, it will stabilize aggregate deposits and reduce the possibility of capital flight during economic distress.

Even if a host country offers deposit insurance, the credibility of deposit insurance also matters. If depositors lack of confidence in the ability of the deposit insurance fund to meet its obligations, they will engage in deposit withdrawal. In this case, Peek and Rosenberg (2000b, p.50) propose that “in countries that allow foreign currency deposits, depositors may be more comfortable placing such deposits in foreign banks that have more ready access to foreign currency during a banking crisis, with the lender of last resort for the bank being the central bank in the bank’s home country rather than that of the host country”. Thus financial burden on the host country would be reduced.

Many developing countries have dollarized their financial markets in order to integrate themselves with international capital markets through liberalizing their capital accounts and financial markets. However, during financial crises, governments of those countries often found themselves lacking enough international reserves to function as a lender of last resort because a central bank can not perform as a lender of last resort in a currency other than its own currency.

A strong presence of foreign banks can enhance the transparency in the banking sector and efficiency of the macroeconomic policies followed by the countries with weak domestic banking system and fiscal institutions, thus reducing the probability of self-fulfilling currency crises and costly government rescue operations. Joint ventures with foreign banks will have more transparent accounts, and they will not put forth the same pressures as domestic banks for a government rescue operation since they are not only more insulated from government pressure in their lending and investment decisions, but also they are subject to an additional set of regulators, uninfluenced by local political concerns. Because a foreign bank knows that it is hard for the government to convince the public to bail out a foreign bank, it will be more cautious in its loan policy and credit risk underwriting. Thus, as the number of joint ventures with foreign banks increase in a domestic economy, one can expect a smaller shock to public debt generated by the banking system.

### III. Empirical Framework

In order to identify the determinants of banking crises in transition economies, the probability of banking crises is estimated as a function of a set of explanatory variables identified by the empirical literature as useful indicators of a bank’s failure (macroeconomic factors, financial variables, and institutional factors) by using a logit model in panel data context. The period under study is between 1990 and 2006. Our sample includes 28 transition economies. We estimate the following logit model specifications:

$$\text{Crisis}_{it} = \beta_1 + \beta_2 \text{Growth}_{it} + \beta_3 \text{Inflation}_{it} + \beta_4 \text{Depreciation}_{it} + \beta_5 \text{Interest}_{it} + \beta_6 \text{Surplus/GDP}_{it} + \beta_7 \text{Private/GDP}_{it} + \beta_8 \text{Creditgrowth}_{it} + \beta_9 \text{Cash/bank}_{it} + \beta_{10} \text{M2/Reserves}_{it} + \beta_{11} \text{Foreign}_{it} + \beta_{12} \text{Bankreform}_{it} + \text{U}_{it}$$

The theoretical and empirical literature has identified a vast array of variables potentially associated with banking crisis. The variables used in our analysis were chosen in light of the theory of the determinants of banking crises, previous results found in the literature, country specific factors, and the availability of data. The explanatory variables capturing macroeconomic factors, bank specific indicators, external factors and institutional factors are defined below. Definitions and sources of variables are given in Table 2. Crisis is a dummy variable equal to one if a country experienced a systemic banking crises at any point during the period of study as defined by Caprio and Klingebiel (2003) and Laeven and Fabian (2008).

#### Macro Economic Variables

##### GROWTH: The Rate of Growth of Real GDP.

Kaminsky and Reinhart (1999) highlight the causal relationship between growth slowdown and banking crises. By examining the banking crises in seven developing countries, Sundararajan and Balino (1991) conclude that banking crises tend to occur after rapid economic growth. Eichengreen and Rose (1998) find that slow growth at

home tends to be associated with banking crises. Goldstein and Turner (1996) document that volatility of growth rates in emerging markets are particularly higher than in industrial countries.

Negative macroeconomic shocks deteriorate the balance sheets of banks and banks' borrowers. The effects of adverse macroeconomic shocks on banking crises are captured by the rate of growth of real GDP.

#### **INTEREST: Real Interest Rate.**

**Real interest rate = Nominal Interest Rate - The Contemporaneous Rate of Inflation**

Since one of the main functions of banks is maturity transformation, i.e. financing long term investments with short term borrowing, banks are subject to interest rate risk. One of the external macro economic conditions that have played a role in the banking crises especially in emerging markets is a sudden and sharp increase in world interest rates. With financial liberalization and openness, besides their traditional funding sources of bank deposits, banks will have another source of funding: borrowing from international interbank markets. Banks in many developing countries have recently relied on short-term borrowing to finance long term investments and government deficits. They offer high levels of interest rates to attract foreign deposits. However, this type of maturity transformation leaves banks highly open to interest rate risk. A sharp rise in industrial country interest rates can curtail the flow of foreign funds to emerging markets and raise the cost of the foreign funds for domestic banks and firms.

An unanticipated rise in interest rates can cause substantial harm to the balance sheets of non-financial firms due to decreases in their cash flows owing to higher interest payments of firms and households. In turn, firms fall into difficulty servicing their existing loans and non-performing loans increases. Thus unanticipated increases in short-term interest rates precipitate banking problems and insolvency (Bernanke and Gertler, 1995). Thus, a large increase in short-term interest rates is likely to be a major source of systemic banking sector problems.

#### **INFLATION: The Rate of Change of the GNP Deflator.**

High inflation often leads to an increase in banking activity. Since chronic high inflation raises the cost of holding money, demand rises for alternative assets which are mostly provided by financial sector, and the volume of banking transactions increases, which in turn makes profits of banks surge: high inflation is associated with high net interest margins and profitability in the banking sector. Hence, banking sectors of countries with a history of high inflation may face with problems after a successful stabilization program. On the other hand, a successful stabilization program also provides financial stability. Thus, in our model the expected sign for the coefficient on the rate of growth of inflation rate (the GNP deflator) is ambiguous.

#### **DEPRECIATION: The Rate of Depreciation of Local Currency Against the US Dollar.**

In order to test the hypothesis that bank failure may be driven by foreign exchange risk, the rate of depreciation of the local currencies is used in the model. Exchange rate shifts and foreign currency loans were a source of banking problems in almost all emerging market financial crises (Lindergen, Garcia, and Saal, 1996). Unexpected exchange rate depreciations can negatively affect the banking sector directly when banks have sizeable un-hedged foreign liabilities and/or there is a maturity mismatch between bank assets and liabilities, or indirectly when large depreciation creates deterioration in balance sheets of bank borrowers.

#### **SURPLUS/GDP: Ratio of Central Government Budget Surplus to GDP.**

Measures to deal with problems in the balance sheets of banking sector may be delayed due to the budgetary difficulties of the central government. In turn, the initial problems may grow to systemic proportions and turn in to a full-fledged crisis. Thus, in our model the expected sign for the coefficient on the ratio of central government budget surplus to GDP is positive.

#### **Financial Variables**

**CASH/BANK: Ratio of Bank Liquid Reserves to Bank Assets.**

If the banking system is illiquid and fragile, adverse macroeconomic conditions may affect bank balance sheets negatively and lead to banking crises. The ratio of bank cash and reserves to bank assets are used to capture

liquidity in our model. The expected sign for the coefficient on the ratio of bank cash and reserves to bank assets is negative.

#### **M2/RESERVES: The Ratio of M2 to Foreign Exchange Reserves of the Central Bank.**

The ratio of M2 to foreign exchange rate reserves is used to test bank vulnerability to sudden capital outflows. Reversal of capital inflows dominated by bank lending has similar effects as bank runs by domestic depositors. When foreign investors lose their confidence, they withdraw their funds unexpectedly, and they refuse to roll-over existing debt stock, leaving domestic banks illiquid. As domestic banks are unable to roll over their debts that are falling due, they will be forced to call in domestic credits or refuse to role them over and to sell their assets at fire-sale prices in order to restore their liquidity, leading to financial crises and systemic crises in the market (Radelet and Sachs, 1998). The more these capital inflows are in the form of short term portfolio investments rather than direct foreign investments, the more the country will be vulnerable to capital flow reversals. Thus, an economy which is used to enjoying large-scale capital inflows can not obtain such inflows anymore and can run into sudden payment requests of its outstanding loans.

#### **PRIVATE/GDP: The Ratio of Domestic Credit to the Private Sector to GDP**

In our model, the ratio of credit to the private sector to GDP is used to capture the extent to which financial liberalization has progressed. The econometric work of Johnston and Pazarbasioglu (1995), Kaminsky and Reinhart (1999) and Demirguc-Kunt and Detragiache (2001) has shown that inadequate preparation for financial liberalization has often preceded financial crises. Experiences of many countries indicates that the banking crises occurred in countries where inadequate internal controls and inadequate prudential regulation and supervision existed when financial liberalization took place such as prior to banking crises of Colombia in mid-1980s, Venezuela in 1994-95, Spain during the early 1980s, East Asia in 1990s, and transition economies such as Estonia and Lithuania (IMF, 1998). Deregulation of a financial system and rapid credit growth can be disastrous if banking institutions and their regulators do not have adequate expertise, resources and training to monitor and evaluate risk taking. The supervisory and regulatory framework will not be effective if there are deficiencies in the accounting, disclosure and legal frameworks for banking, which allows banks to disguise loan losses and their financial difficulties. In many of the countries that have experienced financial liberalization, a significant rise in bank lending and risk taking has been observed (Sundararajan and Balino, 1991). In almost all countries experiencing banking crisis, domestic credit grows rapidly and faster than bank deposits.

#### **CREDITGROWTH: Rate of Growth of Real Domestic Credit.**

##### **Banking crises have often been preceded by both bank lending booms and boom-bust cycles**

Gavin and Haussman (1996) argue that the empirical link between lending booms and financial crises is very strong. However, Sachs, Tor-nell, and Velasco (1996) stress that an increase in bank lending may not be something to worry about since this shows financial deepening in the economy, but rapid growth of bank credit to private sector may be a cause for concern since this may lead to decline in the quality of credit as we argued above.

Lending booms, financed either by expansionary monetary and fiscal policies or large capital inflows, have often resulted in overinvestment in real assets, which leads to sharp rises in equity and real estate prices. Banks make loans to construction companies and the real estate sector since these sectors are thought to offer the best collateral. Initially, asset prices went up as borrowers bid up the price of real estate, and thus projects were seen as profitable. With this optimism, banks continue to over-lend to the projects.

#### **Institutional Variables**

##### **BANKREFORM: EBRD Index of Banking Sector Reform.**

Banking sector reform index is taken from EBRD which reports a yearly assessment of the level of banking restrictions in a country. The index ranges from 1 to 5 with higher values indicating greater restrictions. In constructing this index, EBRD considers the ease with which foreign banks can open branches and subsidiaries; government interference in the allocation of credit, including government ownership of banks; the ability of private banks to operate without government regulation such as deposit insurance; and the ability of banks to provide a wide range of financial services including real estate and securities transactions, and insurance. We would expect that countries that have experienced crises would have more restrictive banking environments.

## **FOREIGN: Asset Share of Foreign Banks (in percent).**

The participation of foreign banks, which base in a home country with strong economy and banking regulation and supervision, in domestic financial markets of transition economies can promote the stability of the domestic deposit base and the stability of domestic banking and financial system, make banking systems more robust to adverse domestic or external shocks, improve prudential supervision and regulation of the domestic financial system, and enhance the transparency in the banking sector and efficiency of the macroeconomic policies. We would expect that foreign bank participation decreases the probability of the banking crises.

## **V. Conclusion:**

Using a multivariate logit econometric model, we test the hypothesis that foreign bank participation contributes to decrease in banking crises in transition economies in 1990-2008. The sample includes 28 transition economies. The obtained results proved to be robust to different model specifications, demonstrating that there is a negative relation between foreign bank presence and banking crisis in a country during the estimation period. Thus, the results suggest that foreign bank participation decreases the possibility of banking crises in transition economies, controlling for other factors that may cause banking crisis.

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